

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

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MEMORANDUM

DATE September 11, 1998

SUBJ Evaluation of Hollingsworth Saco Lowell/Easley Site Trust (HSL/EST) status

under the RCRIS Corrective Action Environmental Indicator Event Codes (CA725

and CA750) EPA I D Number SCD 065 053 217

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Concur

I. PURPOSE OF MEMO

This memo is written to formalize an evaluation of Hollingsworth Saco Lowell/Easley Site Trust (HSL/EST), Easley, SC status in relation to the following corrective action event codes defined in the Resource Conservation and Recovery Information System (RCRIS)

- 1) Human Exposures Controlled Determination (CA725),
- 2) Groundwater Releases Controlled Determination (CA750)

Since South Carolina is authorized for HSWA Corrective Action, concurrence by the SCDHEC Division Chief is required prior to entering these event codes into RCRIS. Your concurrence with the interpretations provided in the following paragraphs and the subsequent recommendations is satisfied by dating and signing above. See MEMO ATTACHMENT 1 for more specific information of the RCRIS definitions for CA725 and CA750.

II. HISTORY OF ENVIRONMENTAL INDICATOR EVALUATIONS AT THE FACILITY AND REFERENCE DOCUMENTS

In cooperation with the staff of SCDHEC, this particular evaluation is the *first* evaluation performed by EPA for Hollingsworth Saco Lowell/Easley Site Trust of Easley, SC. The evaluation, interpretations, conclusions and recommendations regarding the contamination, exposures and contaminant migration at the facility, is based on information obtained from the following documents 1998 Semi-Annual Corrective Action Report (dated September 1998), Interim Measures Report (dated July 1998), 1997 Annual Corrective Action Report (dated March 1998), RFI Phase II Work Plan (dated September 1997)

III. FACILITY SUMMARY

The HSL/EST facility is located on approximately 210 acres of wooded, light industrial to rural land off of US Highway 123, east of Easley, SC (Figure 1-1). The facility property is generally contained inside the perimeter roads with the exception of a small tract located to the north. Rural residences are scattered outside the facility perimeter road. Since 1957, the facility has been involved in the manufacture of textile machinery and related equipment. Operations included machining, stamping, plating, heat-treating, electroplating and painting. Process wastes generated included a RCRA listed electroplating wastewater stream, chlorinated solvents and VOCs, which were disposed on site.

The former sludge drying beds (SWMU 18), former equalization basin (SWMU 17) and the former solid waste landfill (SWMU 16) were RCRA closed in 1987 with waste in place as landfills and received a post closure permit for contaminated groundwater. Pursuant to the interim measures stabilization initiative of 1993, HSL/EST currently operates two water treatment systems (about 50-100 gpm each). a surface water treatment system in operation since September 1993 and a groundwater pump and treatment system in operation since January 1994. These two systems were installed to address hazardous constituent releases (chlorinated hydrocarbons) in Eastern Creek surface water and in groundwater at the northeast property boundary.

Interim measures stabilization activities at several contaminated SWMUs (SWMUs 21, 40) included additional baseline soil sampling to evaluate the feasibility of a soil vapor extraction (SVE) pilot test, conducting both a SVE and Air Sparge pilot tests, iron bacteria treatability test and buried drum removal. The RFI Phase II Report is scheduled for completion in late 1998.

In January 1997, the revised Post Closure Care Hazardous Waste Peimit became effective SCDHEC issued this combined RCRA/HSWA permit which requires continued phased RFIs at several SWMUs as well as the submission of semi-annual corrective action effectiveness reports for the continued treatment of contaminated groundwater from the entire facility About 16

SWMUs are subject to RFI activities.

IV. RECOMMENDATION FOR CA725:

CA725 YE Yes, as of this date, plausible [onsite and/or offsite] human exposures are controlled by [Stabilization/Interim Measures or Access Controls].

As more fully discussed in MEMO ATTACHMENT 2, [Stabilization/Interim Measures and/or Access Control Measures] are controlling human exposures to all environmental media of concern at the Hollingsworth Saco Lowell/Easley Site Trust Because these measures are controlling human exposures to unacceptable contamination, it is recommended that CA725 YE be entered into RCRIS For data management purposes, event codes (e.g., CA 600 and CA650) have been or should be reviewed for RCRIS entry to reflect the implementation of the specific stabilization/interim measures

V. RECOMMENDATION FOR CA750:

CA750 YE Yes, as of this date, groundwater contamination exists and releases are controlled

Although groundwater is contaminated above relevant action levels, currently implemented control measures have demonstrated the effectiveness in controlling the migration of contaminated groundwater beyond the facility boundary. These control measures include

- 1 Groundwater pump and treat system designed to reduce the contaminant mass and hydraulically stabilize plume migration,
- Future enhancements to the groundwater remediation system (e.g., additional extraction wells, capture zone modeling, iron removal, SVE, monitored natural attenuation),
- 3 Surface water air stripper system to remove VOC contamination from Eastern Creek

As more fully discussed in MEMO ATTACHMENT 2, these implemented stabilization/interim measures are successfully controlling releases to the groundwater. Thus, it is recommended that CA725 YE be entered into RCRIS. Also, for data management purposes, event codes (e.g., CA 600 and CA650) have been or should be reviewed for RCRIS entry to reflect the implementation of the specific stabilization/interim measures.

VI. SUMMARY OF FOLLOW-UP ACTIONS

Although sufficient information exits for the Agencies to conclude that plausible human exposure and groundwater releases are currently controlled, the facility continues to conduct

additional activities which improve remedial operations and the overall understanding of the conceptual "contaminated site" model—Such future RCRA/HSWA Program activities are as follows

- 1 Groundwater modeling indicates that the 4 recovery wells have established an adequate hydraulic capture zone to address this deep bedrock contamination for the northeastern area VOC and chromium plumes. However, there are two fringe areas of groundwater contamination in the northwest (from wells S-8 to W-24A to PW-2) and the southern (near well W-30) areas which may be outside these established capture zones. To address these fringe areas, the facility is assessing the potential for a natural attenuation option and has proposed the startup of an additional pilot scale recovery system in the Fall 1998.
- 2. A 3-month pilot scale treatability test will be conducted in late 1998 using a dedicated low-profile air stripping system to evaluate several chemical additives for eliminating the iron bacteria. Iron bacteria decreases the VOC removal efficiency of the current packed tower air strippers.
- 3 Sediments in several low areas of the onsite portion of Western Creek contains SVOCs (PAHs) HSL/EST has proposed to collect additional sediment samples and submit the results in late 1998

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MEMO ATTACHMENT 1

A. HUMAN EXPOSURES CONTROLLED DETERMINATION (CA725)

There are five (5) national status codes under CA725 These status codes are

1)	YE	Yes, applicable as of this date [1 e, human exposures are controlled as of this date]
2)	NA	Previous determination no longer applicable as of this date
3)	NC	No control measures necessary

- 4) NO Facility does not meet definition [i e , human exposures are not controlled as of this date]
- 5) IN More information needed

The first three (3) status codes listed above were defined in January 1995 Data Element Dictionary for RCRIS The last two (2) status codes were defined in June 1997 Data Element Dictionary

Note that CA725 is designed to measure human exposures over the entire facility (i e, the code does not track SWMU specific actions or success). Every area at the facility must meet the definition before a YE or NC status code can be entered for CA725. The NO status code should be entered if there are current unacceptable risks to humans due to releases of hazardous wastes or hazardous constituents from any SWMU(s) or AOC(s). The IN status code is designed to cover those cases where insufficient information is available to make an informed decision on whether or not human exposures are controlled. If an evaluation determines that there are both unacceptable and uncontrolled current risks to humans at the facility (NO) along with insufficient information on contamination or exposures at the facility (IN), then the priority for the EI recommendation is the NO status code.

In Region 4's opinion, the previous relevance of NA as a meaningful status code is eliminated by the June 1997 Data Element Dictionary's inclusion of NO and IN to the existing YE and NC status codes. In other words, YE, NC, NO and IN cover all of the scenarios possible in an evaluation or reevaluation of a facility for CA725 Therefore, it is Region 4's opinion that only YE, NC, NO and IN should be utilized to categorize a facility for CA725 No facility in Region 4 should carry a NA status code

B. GROUNDWATER RELEASES CONTROLLED DETERMINATION (CA750)

There are five (5) status codes listed under CA750.

- 1) YE Yes, applicable as of this date [i e , groundwater releases are controlled as of this date]
- 2) NA Previous determination no longer applicable as of this date
- 3) NR No releases to groundwater
- 4) NO Facility does not meet definition [i.e., groundwater releases are not controlled as of this date]
- 5) IN More information needed

The first three (3) status codes listed above were defined in January 1995 Data Element Dictionary for RCRIS The last two (2) status codes were defined in June 1997 Data Element Dictionary

The status codes for CA750 are designed to measure the adequacy of actively (e g , pump and treat) or passively (e g , natural attenuation) controlling the physical movement of groundwater contaminated with hazardous constituents above relevant action levels. The designated boundary (e g , the facility boundary, a line upgradient of receptors, the leading edge of the plume as defined by levels above action levels or cleanup standards, etc.) is the point where the success or failure of controlling the migration of hazardous constituents is measured for active control systems. Every contaminated area at the facility must be evaluated and found to have the migration of contaminated groundwater controlled before a "YE" status code can be entered.

If contaminated groundwater is not controlled in any area(s) of the facility, the NO status code should be entered. If there is not enough information at certain areas to make an informed decision as to whether groundwater releases are controlled, then the IN status code should be entered. If an evaluation determines that there are both uncontrolled groundwater releases for certain units/areas (NO) and insufficient information at certain units/areas of groundwater contamination (IN), then the priority for the EI recommendation should be the NO status code.

In Region 4's opinion, the previous relevance of NA as a meaningful status code is eliminated by the June 1997 Data Element Dictionary's inclusion of NO and IN to the existing YE and NR status codes. In other words, YE, NR, NO and IN cover all of the scenarios possible in an evaluation or reevaluation of a facility for CA750. Therefore, it is Region 4's opinion that only YE, NR, NO and IN should be utilized to categorize a facility for CA725. No facility in Region 4 should carry a NA status code.

MEMO ATTACHMENT 2

MEDIA BY MEDIA DISCUSSION OF CONTAMINATION AND THE STATUS OF PLAUSIBLE HUMAN EXPOSURES

A. GROUNDWATER

Groundwater is contaminated [onsite and slightly offsite], and plausible [onsite and offsite] human exposures are controlled by [Stabilization/Interim Measures and Access Controls]

ASSESSMENT -

Releases from SWMUs and the two RCRA Regulated Units (SWL and SIL) have contaminated groundwater at concentrations above relevant action levels (MCLs) TCE, PCE and several degradation products (1,2-DCE, 1,1-DCA, 1,1,1-TCA, vinyl chloride) and dissolved chromium are the primary groundwater contaminants. During June 1998, the maximum concentrations measured in the groundwater for the primary contaminants was 16,000 ppb TCE (MCL = 5 ppb), 210 ppb PCE (MCL = 5 ppb) and 460 ppb chromium (MCL = 100 ppb). The TCE plume within the uppermost saprolite and shallow bedrock extends over 80 acres (1700'x2100') of the eastern plant site. Less than 5% of this TCE plume has migrated offsite to the north. The TCE plume decreases with depth to an areal size of approximately 20 acres in the deep bedrock zone at the northeastern plant boundary. Two small, dissolved chromium plumes, originate immediately downgradient of the regulated units. The combined areal extent of the chromium plumes is estimated at 2 acres. [As a baseline reference for the second quarter 1998, isoconcentration plume maps for the total VOCs in the saprolite, shallow bedrock and deep bedrock (Figures 3-4, 3-5, 3-6) and the dissolved chromium (Figure 3-7) are attached. These figures are from the referenced 1998 Semi-Annual Corrective Action Report]

A groundwater recovery and treatment system began operations in January 1994 to hydraulically contain and remove contaminant mass from all of the plumes. The stabilization interim measures includes four (4) recovery wells with a cumulative pumping rate of 50 gpm and an air stripper for VOC removal. Also, almost 109 wells are monitored quarterly for water elevations to assess recovery system effectiveness, calculate groundwater flow rates and estimate plume flow direction. Water quality data are also collected semi-annually from plume definition wells to further evaluate the system effectiveness.

The four active recovery wells are located immediately downgradient of the SWL and the SIL Recovery wells are either screened in the shallow (110-121 feet deep) or the deep bedrock (255-261 feet deep). One of the deep recovery wells (BR-3) is responsible for over 90% of the extracted groundwater. Treated groundwater is then discharged through NPDES Outfall No

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Continued pumping has developed significant capture zones in the shallow and deep bedrock. Smaller capture zones are even evident in the uppermost saprolite aquifer. Hydraulic containment appears to be adequate to the east and north of the facility. Additional RFI activities are assessing the hydraulic conditions which extend to the northwest plume area and south of a groundwater divide. Additionally, significant mass removal is being obtained. During the first half of 1998, an estimated 73 kg of VOCs (primarily TCE) was removed from the groundwater plume.

HUMAN EXPOSURES –

There are [plausible offsite human exposures] to the groundwater contamination HSL/EST owns and controls access to all property except that small portion affected by the offsite groundwater plume which has migrated to the north. However, since 1991 the extent of the groundwater VOC plume has remained relatively stable and is not expanding. Also, since the startup of the interim recovery system in 1994, contaminant concentrations within the plumes have decreased significantly. Thus, the interim groundwater recovery system appears to be effective for hydraulic containment of the plume and contaminant mass removal. Within the most recent six months (1997-1998), only minor changes have occurred in the magnitude and extent of the dissolved chromium plume. Since both dissolved chromium plumes remain entirely on site, there are no plausible offsite human exposures.

High-walled security fences or physical barriers surround all SWMUs and contaminant source areas within the plant's perimeter road. Water service to the town and all adjacent rural homes and property is provided by the local water utility. Additionally, there are currently no known residences or water supply wells on the affected offsite property. Thus, human exposures have been eliminated except for the on-site worker who only conducts sampling and remediation activities under approved health and safety plans.

Based on the above discussion, plausible human exposures to groundwater contamination are controlled by restricted plant access, interim measures (source removal) and groundwater pump and treatment.

B. SURFACE WATER

Surface water is contaminated [onsite], and plausible [onsite] human exposures are controlled by [Stabilization/Interim Measures and/or Access Controls]

Three small surface waters originate from the plant site—Western Creek, Middle Creek and Eastern Creek—All creeks flow to the north but only the Eastern Creek flows offsite Releases from SWMUs no longer contaminate the surface water in the Eastern and Western

Creeks at concentrations above relevant action levels (MCLs) Surface water contamination does exit in the Middle Creek above drinking water MCLs but <u>less than</u> Region 4 WMD Surface Water Screening Values

Surface water and sediment samples were analyzed from the Eastern, Middle and Western Creeks during the Fall 1997 season (typically low-flow time of year) and again in April 1998 The samples were analyzed for VOCs, SVOCs, total metals, PCBs, pesticides and cyanide

In Eastern Creek, which flows off-site, no significant contaminant levels were detected above the Region III RBCs (MCLs and residential soil) in the surface water and sediment samples. Thus, no further characterization of Eastern Creek is planned.

In Middle Creek, VOCs (PCE, TCE, VC, plus other degradation products) were detected in surface water samples at concentrations ranging from 9.5 ppm to 43 ppb. Resampling about six months later, confirmed that VOCs remained present at approximately these same levels which exceed the relevant action levels. VOCs were also detected in the sediments of Middle Creek HSL/EST will conduct a groundwater extraction and treatment pilot test at well PW-1A to address the VOCs in the Middle Creek and an adjacent seep. Additional surface water sampling will be collected to assess the effectiveness of the pilot test.

In Western Creek, SVOCs (PAHs) were detected in all five sediment samples during both sampling events of 1997 and 1998 SVOC levels in the sediment occasionally exceeded the relevant action level (Region III RBC for residential soil) Sediment concentrations ranged from a low of 12 ppb to as high as 321 ppm. Releases to the surface water were insignificant and no further surface water sampling will be done. However, a third sampling event of creek sediments is planned for the fall 1998.

There are [plausible onsite worker exposures] to the surface water contamination from the two onsite creeks (Middle Creek and Western Creek) However, by following facility Safety and Health plans, the exposure duration and frequency can reasonably be expected to be minimal

Based on the above discussion, plausible human exposures to surface water contamination are controlled.

C. SOIL -

Soil is contaminated [onsite], and plausible [onsite] human exposures are controlled by [Stabilization/Interim Measures and/or Access Controls]

Deep soil at the facility is contaminated with constituent concentrations above relevant

action levels (Region III RBCs for residential soil) Direct Push Technology (DPT) sampling techniques was frequently used to obtain soil borings down to the water table (about 20 - 40 feet deep). These samples were analyzed for VOCs, SVOCs and metals. Recently, baseline soil information was also used to evaluate the feasibility of soil vapor extraction (SVE) technology as a remedial option at several SWMUs.

Generally, surficial soils to depths of 4 feet were <u>not</u> contaminated above relevant action levels. However, baseline soil sampling at the Former Oil Pits (SWMU 21) indicated the deeper soils were contaminated with many VOCs (acetone, BTEX, TCE, PCE and degradation products). The maximum contaminant levels generally were about 5-8 times greater than the relevant action levels. Specifically, for soils at depths of 8 - 26 feet, TCE and PCE were measured at 290 ppm and 96 ppm. These elevated VOC concentrations indicate that SWMU 21 would be amenable to remediation by SVE technology.

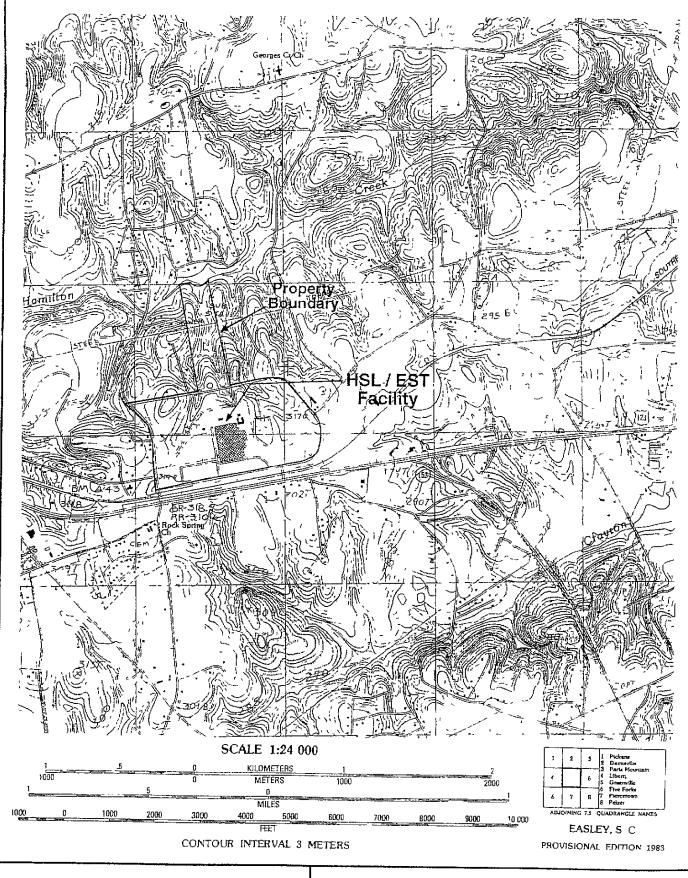
There is isolated soil contamination at several SWMUs, and there are plausible onsite human exposures to this contamination. For example, drum removals and soil excavations may expose onsite workers to additional VOC contamination. However, these plausible human exposures are controlled by the depth of soil contamination, limited access to SWMUs and facility excavation and Health and Safety Plans.

Given these findings, plausible human exposures to contaminated soil are controlled but, deep soil contamination does represent a continuing source of groundwater contamination (which is being addressed).

D. AIR

Air is [not contaminated or reasonably expected not to be contaminated]

Releases to air from soil, groundwater and/or surface water contaminated by SWMUs and/or AOCs at the facility is [not occurring, not known to be occurring at concentrations above relevant action levels or not expected to be occurring above relevant action levels]. Therefore, there is no human exposure to contamination via an air route.



RUST ENVIRONMENT & INFRASTRUCTURE

FIGURE 1-1 SITE LOCATION MAP INTERIM MEASURES WORKPLAN

HOLLINGSWORTH SACO LOWELL/EASLEY SITE TRUST Easley South Carolina

